

PROJECT DEVELOPMENT PHASE

SPRINT 4

TEAM ID	PNT2022TMID08449
PROJECT NAME	IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE
DATE	13 NOVEMBER 2022

STEP 1: First open python code and run code, this capture the image in video and identify which animal or object are captured.

```
animal.py - C:\Users\murug\Desktop\opencv\animal.py (3.7.0)
File Edit Format Run Options Window Help

import cv2
import numpy as np

net=cv2.dnn.readNet('yolov3.weights','yolov3.cfg')
classes=[]
with open('coco.names','r') as f:
    classes=f.readlines()
# img=cv2.imread('elephant.jpg')
cap=cv2.VideoCapture('video.mp4')
# cap=cv2.VideoCapture('person.jpg')
# cap=cv2.VideoCapture(0)
while True:
    _,img=cap.read()

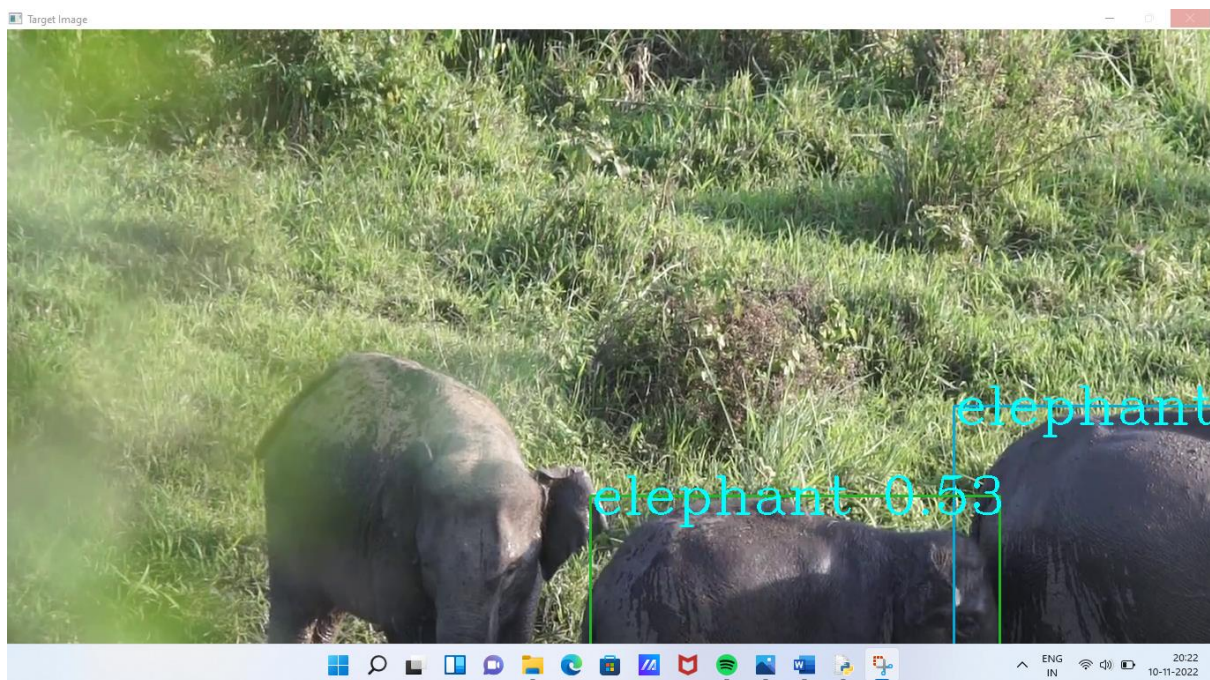
    height,width,_=img.shape
    blob=cv2.dnn.blobFromImage(img,1/255,(416,416),(0,0,0),swapRB=True,crop=False) # (img,reduction the pixels size,size of the image,rgb colour)
    net.setInput(blob)
    output_layers_names=net.getUnconnectedOutLayersNames()
    layeroutput=net.forward(output_layers_names)
    boxes=[]
    confidences=[]
    class_ids=[]
    for detection in layeroutput:
        scores=detection[5:]
        class_id=np.argmax(scores)
        confidence=scores[class_id]
        if confidence > 0.5:
            center_x=int(detection[0]*width)
            center_y=int(detection[1]*height)
            w=int(detection[2]*width)
            h=int(detection[3]*height)

            x=int(center_x - w/2)
            y=int(center_y - h/2)

            boxes.append([x,y,w,h])
            confidences.append((float(confidence)))
            class_ids.append(class_id)

Ln: 14 Col: 13
```

STEP 2: It shows the detected animal or object name which is represented by square with the name of the animal or object.



PYTHON CODE:

```
import cv2
```

```
import numpy as np
```

```

net=cv2.dnn.readNet('yolov3.weights','yolov3.cfg')
classes=[]
with open('coco.names','r') as f:
    classes=f.read().splitlines()
# img=cv2.imread('elephant.jpg')
cap=cv2.VideoCapture('video.mp4')
# cap=cv2.VideoCapture('person.jpg')
# cap=cv2.VideoCapture(0)
while True:
    _,img=cap.read()

    height,width,_=img.shape

    blob=cv2.dnn.blobFromImage(img,1/255,(416,416),(0,0,0),swapRB=True,crop
=False) #(img,reduction the pixels size,size of the image,rgb colour)
    net.setInput(blob)
    output_layers_names=net.getUnconnectedOutLayersNames()
    layeroutput=net.forward(output_layers_names)
    boxes=[]
    confidences=[]
    class_ids=[]
    for output in layeroutput:
        for detection in output:
            scores=detection[5:]
            class_id=np.argmax(scores)
            confidence=scores[class_id]

```

```
if confidence > 0.5:
    center_x=int(detection[0]*width)
    center_y =int(detection[1]*height)
    w=int(detection[2]*width)
    h=int(detection[3]*height)

    x=int(center_x - w/2)
    y=int(center_y - h/2)

    boxes.append([x,y,w,h])
    confidences.append((float(confidence)))
    class_ids.append(class_id)
```

```
indexes=cv2.dnn.NMSBoxes(boxes,confidences,0.5,0.4)
font=cv2.FONT_HERSHEY_COMPLEX
colors=np.random.uniform(0,255,size=(len(boxes),3))
for i in indexes.flatten():
    x,y,w,h=boxes[i]
    label=str(classes[class_ids[i]])
    confidence=str(round(confidences[i],2))
    color=colors[i]
    cv2.rectangle(img,(x,y),(x+w ,y+h),color,2)
    cv2.putText(img,label + " "+confidence,(x,y+20),font,2,(255,255,0),2)
```

```
cv2.imshow('Target Image',img)
```

```
key=cv2.waitKey(1)
```

```
if key ==ord('q'):
```

```
    break
```

```
cap.release()
```

```
# cv2.waitKey(0)
```

```
cv2.destroyAllWindows()
```